



*Accelerating solutions for highway safety, renewal, reliability, and capacity*

## SHRP 2 Safety

Making a Significant Improvement in Highway Safety

# Fourth Safety Research Symposium July 23-24, 2009

TRANSPORTATION RESEARCH BOARD  
OF THE NATIONAL ACADEMIES

# SHRP 2 Naturalistic Driving Field Study Privacy Procedures

- Department of Health and Human Services policy for the Protection of Human Subjects (45 CFR 46)

- Multiple Institutional Review Boards

Project S06, Technical Coordination and Quality Control,  
VTTI IRB

6 Project S07 Site Contractor IRBs

NAS IRB

- National Institutes of Health Certificate of Confidentiality
- Consent process for volunteer drivers

# IRB Coordination and Communication

- July 9 IRB coordination meeting:
  - Representation from all contractor IRB and NAS IRB
  - Overview of the SHRP 2 NDS
  - Review of draft consent form and protocol
- July 20 NAS IRB meeting
  - Overview of the SHRP 2 NDS
  - Summary of July 9 meeting
  - Discussion of issues and process
- On-going coordination and communication to finalize consent process and protocols

# Target IRB Schedule

- September: VT submits participant application to their IRB
- October: VT submits call center application to their IRB
- October: S07 site contractors submit to their IRBs
- Oct-Nov: VT applies for Certificate of Confidentiality
- Nov-Dec: Upon S07 IRB approval, submit to NAS IRB
- Nov-Dec: Upon VT approval, submit call center to NAS IRB
- January 2010: begin participant recruitment
- February 2010: begin installation

# Data Protection and Data Sharing

# Data Summary

## Four categories of data being collected:

1. From instrumented vehicles: continuous recording of video and sensor/parametric data
2. Driver assessment tests for primary drivers
3. Detailed crash investigations for selected crashes
4. Under Project s04, roadway/roadside characteristics and features from mobile data collection vans and external sources

**800 TB of video + 100 TB of vehicle sensor data  
+ roadway data = ~1 petabyte of data**

# Data Chain of Custody: Site to VT

- Data are encrypted as collected on the DAS hard drive.
- Site contractor removes full hard drive, replaces with empty one; data remain encrypted. Hard drive remains in technician's possession until ...
- Site contractor loads encrypted data to a dedicated server at contractor facility from which the data are uploaded to VT secure server. (ASAP, 24 hours, or locked in secure facility.) Data remain encrypted.
- VT: de-encryption, data checks, driver ID, store on secure server
- Hard drive is wiped clean upon verification from VT server
- VT will retain all data for duration of SHRP 2

# Examples of Data Requiring Protection

- Participant information file
- Driver face video
- GPS coordinates of home, place of work
- Crash investigation data
- Combinations of crash and other data that by themselves would not reveal identity
- Other video in case of severe/fatal injuries (may be sensitive even if not actually revealing identity)
- Proprietary information from vehicle manufacturer

# When Data Might be “Seen”

- Most data:
  - Hard drives to be swapped every 4 months or so.
  - Data activities at VT are mostly automated.
  - Therefore, most data will be “unseeable” for several months after it is collected and “unseen” for many months after that, i.e., no real-time knowledge of driver behavior.
- Crashes:
  - DAS provides automatic notification of collisions, with a small data packet.
  - Does crash meet criteria for detailed investigation?
  - If so, data may be viewed within days, depending on when DAS is acquired from the vehicle.

# Data Sharing During SHRP 2

Data sharing agreements must provide the same level of privacy, confidentiality and security as provided in the consent form

## Project S06 server (VTTI)

- Physical security
- Network isolation
- Access security (password protected)
- Multiple levels of access

Data with no privacy restriction

Data with privacy restrictions

-Driver video

-Location (GPS)

# Data Sharing During SHRP 2

- VT holds the data
- Raw data, trip metafile, possibly event file(s)
- Data sharing agreements consistent with approved consent form/protocol protections.
- Proposed: role-based security for access to types or sets of data.
  - Unprotected non-identifying data: most open?
  - De-identified data: some restrictions based on probability of using data combinations to identify?
  - Protected data: most restrictive, data enclave?

# Data Sharing During SHRP 2

- Proposed SHRP 2 technical expert group to review all data access applications for compliance with privacy issues and security provisions.
- At least 3 IRB approvals:
  - VT IRB
  - Researcher's institutional IRB
  - NAS IRB

# Data Sharing After SHRP 2

- NRC report recommends leadership role for NHTSA—actual data storage/management probably by contractor.
- Based on lessons during SHRP 2, a role-based approach may be used.
- Data sharing agreements consistent with approved consent form/protocol protections.
- Technical review committee
- Multiple IRB approvals:  
data holder's  
researcher's  
“SHRP 2 NDS IRB”?
- NRC report recommends oversight committee
- Monitoring?

Ken Campbell  
SHRP 2 Chief Program Officer  
Transportation Research Board  
(202) 536-5187  
[kcampbell@nas.edu](mailto:kcampbell@nas.edu)  
<http://www.trb.org/shrp2/>